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*With Compliments*  
*of the author.*  
Ante-Partum Hæmorrhage,

WITH THE

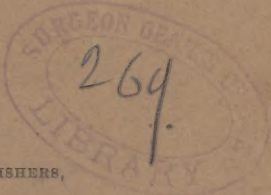
INFUSION OF SIXTY-SIX OUNCES  
OF SALT SOLUTION.

BY

F. B. HARRINGTON, M.D.,

*Physician to Out Patients at Massachusetts General Hospital.*

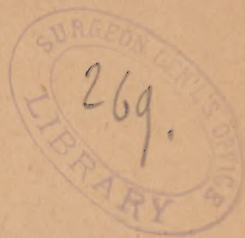
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of March 4, 1886.]



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SEVERE HÆMORRHAGE FROM ANTE-PARTUM  
SEPARATION OF THE PLACENTA, WITH THE  
INFUSION OF SIXTY-SIX OUNCES OF SALT  
SOLUTION.<sup>1</sup>

BY F. B. HARRINGTON, M.D.

MRS. H. is twenty-three years of age. She first came under treatment in January, 1885, suffering with a slight endometritis. She became pregnant for the first time in June. There were no unusual signs during pregnancy until February 6th, about a month before the expected time of delivery. At five P. M., on that date, after lifting some small article, she felt a severe pain in the back. This continued for over a half hour, when there was a sudden rush of blood, wetting the clothing. The flow continued until nearly a pint of blood was collected in a basin. She became faint and was put to bed. When first seen at 6.30 P. M., a large surface of blood was found upon the bed and the night-dress was soaked up to the waist. The pulse was 78 and of good strength. The pains were strong and nearly constant. The uterus was low down in the pelvis, the cervix was hard and unchanged by the pains and the os was wholly undilated. After much effort the tip of the finger was inserted into the os. For an hour and a half the finger was thus held, and, although little progress toward dilatation was made, the escape of any large quantity of blood from the uterus was prevented.

It was impossible at this time to push a single finger

<sup>1</sup> Read, by invitation, before the Obstetrical Society of Boston, February 13, 1886.

into the internal os. There was no perceptible change in the condition of the cervix. No foetal movements were felt and the unceasing pains prevented the hearing of the foetal heart. This condition of the patient continued until 9.45 P.M., when there was a sudden profuse hæmorrhage which weakened her at once. She became blanched and the pulse quickly rose to 120. Immediate emptying of the uterus became absolutely necessary. The finger was again pushed into the os, and the escape of blood from the uterus was prevented.

Dr. Strong, who was sent for, arrived soon after 10 P.M. The patient was etherized at once. The dilatation of the cervix was most difficult. It resembled the virgin cervix rather than that of a woman pregnant for eight months. During the efforts at dilatation the loss of blood was excessive. The sheets having become soaked in blood, three pints by measure were caught in basins. At length a single finger could be made to reach the internal os. A head was felt fixed against this. The pains were incessant. The uterus seemed tonically contracted, and because of this, and for fear of delay in turning, the membranes were not ruptured. Slowly a second and third finger were introduced by the use of the utmost force. When it became possible to sweep the finger about the lower segment of the uterus, a perfectly smooth wall was met on all sides, showing that the placenta was high up. The rush of blood continued and stood in pools on the carpet. The patient was greatly collapsed; she was colorless, covered with cold sweat and breathing rapidly. All the force that could be used was brought to bear upon the cervix, and just as an incision was about to be made the tissues yielded, and a large rent allowed the hand to be pushed into the uterus. The membranes were ruptured. There was a small rush of waters.



The feet were easily found and the child was quickly turned and delivered, but was dead. When the feet were drawn into sight, the placenta appeared preceding the body of the child. The uterus contracted quickly and well. A subcutaneous injection of whiskey and one of ergot were given at once. Hot water with vinegar was injected into the uterus. A steady flow of blood continued although the body of the uterus was well contracted. A Sims' speculum was inserted but no bleeding point could be found in the torn cervix.

A swab covered with powdered persulphate of iron was inserted several times into the cavity of the uterus, and applied to the cervix. This controlled the hæmorrhage.

The condition of the patient was extremely alarming. Only the flutter of a pulse could be felt in the wrist. The patient was inverted and the legs were bandaged from toes to hips. Subcutaneous injections of ether and whiskey were repeatedly given, but the patient, perfectly blanched and almost pulseless, began to gasp and to toss for breath. It was now forty-five minutes since the birth of the child and the patient was sinking. It was decided to try infusion. The right median cephalic vein was exposed and raised upon a director and a ligature was passed beneath it. A funnel and a connecting rubber tube and needle were filled with a solution of salt and water. The needle was tied into the vein. Thirty-six ounces of the salt solution were poured into the vein in about twenty-five minutes. The first few ounces brought the pulse back to the wrist, and the tossing and gasping ceased. Within twenty minutes a slight flush could be seen in the cheeks and the lips took on a little color. The pulse fell to 120 and was of fair strength. The patient was perfectly conscious and took stimulants by the mouth.

There was still no loss of blood and the uterus remained hard and small. The color in the cheeks did not remain long, but the patient was quiet and seemed to be resting easily. It was now an hour and a half since the birth of the child and the uterus had remained well contracted. All seemed to be going well, when suddenly the uterus was found to be enlarging. At the same time blood appeared trickling from the vagina. The uterus did not become larger than a cocoa-nut, but the hæmorrhage was profuse. Fresh pledgets of cotton with persulphate were crowded into the cervix. The vagina was very tightly packed. This was not done however until the uterus had returned to its small size below the symphysis pubis.

It perfectly controlled the hæmorrhage. The sighing and alarm of the patient had returned. She was tossing from side to side. Enemas and subcutaneous injections were given. The heaters were renewed and placed about the patient. The pulse at the wrist was rapid in the extreme, and at times could not be felt. For three-quarters of an hour every effort was made to improve the patient's condition, but she grew steadily weaker. The skin was cold and clammy. The pupils were widely dilated. The patient's mind wandered. Death was imminent. As a last resort it was decided to attempt a second infusion. The left median cephalic vein was this time opened. Thirty ounces of the salt solution were added to the circulation in forty minutes. Slowly the pulse appeared at the wrist. It then became constant, though rapid and feeble. The patient soon became quiet but was utterly exhausted.

The pulse ranged between 150 and 160 and could only be accurately counted at the chest. Six hours later the pulse had fallen to 148, and was somewhat stronger. In twelve hours it dropped to 140. Here it

remained for thirty-six hours, when it fell to 130. On the three following days it ranged between 120 and 130.

February 12. Nearly a week has elapsed, and the patient is doing well. The prognosis is favorable.

February 13. The patient had a chill and the temperature rose to 105°. She was seen by Dr. W. L. Richardson in consultation. He gave a favorable prognosis.

#### REMARKS.

The cause of the first hæmorrhage was an ante-partum separation of the placenta, brought about perhaps by lifting or by old endometritis or by a combination of the two causes.

The cause of the second hæmorrhage was a relaxation of the uterus occurring an hour and a half after the birth of the child.

The labor may be divided as follows :

February 6th.	5. P.M.	First pains.
	5.30 "	A flow of blood.
	9.45 "	A second large loss of blood.
	10.10 "	Ether.
	11.00 "	Child born.
	11.45 "	First infusion begun.
February 7th.	12.10 A.M.	First infusion finished.
	12.45 "	Post-partum hæmorrhage.
	1.30 "	Second infusion begun.
	2.10 "	Second infusion finished.

Since the labor the stomach has acted well. There has been excessive thirst but no appetite. She has been given liquid foods and stimulants in small quantities at short intervals.

No urine was drawn for eighteen hours after the birth of the child. Then two ounces were removed by the catheter. The amount secreted soon increased.

An analysis of the urine by Dr. Charles Harrington gave the following result, February 8.



Color=sl. pale.	Sp. Gr.=1.016.5.
React.=acid.	Amount of Sediment=slt.
Urophæin=N.	Chlorides=M—.
Indican=M+.	Sulphates=N.
Urea=Normal.	E. Phosphates=M—.
Albumen=trace.	Alk. Phosph=+.
Sediment=Free blood and a few hyaline casts.	
Amount of NA. CL.=0.04 per cent, or 0.400 gm. per litre.	

Instead of an increase of the chloride of sodium, we find it almost absent, the normal amount being from seven to eleven grms. per litre.

Four days later the amount of salt in the urine had more than doubled. The packing was removed from the vagina without much difficulty on February 9th. No hæmorrhage followed. The respiration has remained at a low rate, ranging from ten to twelve for four days.

The stitches were removed from the arms on the fifth day. There had been union by first intention in both.

A specimen of the patient's blood examined in regard to its richness in red corpuscles showed that there had been a diminution from 4,500,000 to 1,838,000 per c. m. m. On the 12th there was a farther decrease to 1,824,000, and on the 13th to 1,658,000.

This apparent decrease may have been due to the absorption of water by the blood, at a more rapid rate than new corpuscles could be formed. The number of white corpuscles was largely increased.

The breasts have remained perfectly soft and no milk could be pressed from them.

The subject of the infusion of salt solution was first brought to the notice of the writer, by a paper "On the Value of Transfusion of Blood and Infusion of Salt Solution in Acute Anæmia," which was read by Dr. O. K. Newell on April 1st, 1885, before the Surgical Section of the Suffolk District Society, and which un-



fortunately has never been published. The paper was a translation of an article by Professor Mikulicz (Ueber die Bedeutung der Bluttransfusion und Kochsalzinfusion bei akuter Anämie. Wiener Klinik, Juli 1884).

Mikulicz advises a solution made as follows :

Sod. Chloride	6 0= 3 iss
Sod. Bicarb	1 0=grs. xv
Aq. Distillat	1000 0=oi+

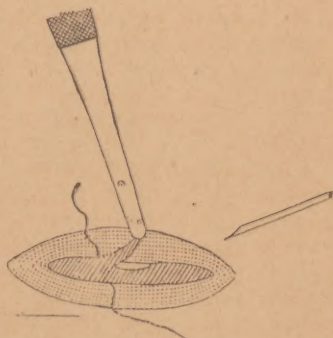
This should be raised to about 100° Fah.

From a pint to three pints can be used. The utmost care should be used that no air shall enter the circulation.

The median cephalic vein can be most conveniently used. The vein should be dissected out and the needle tied into it.



Cut I. Superficial Veins at Bend of Elbow: *a*, outside; *b*, inside; *c*, basilic vein; *d*, cephalic vein.



Cut II. Method of inserting needle.

The amount of pressure can be regulated by raising or depressing the reservoir. The solution enters the current quickly at an elevation of three feet.



Cut III. The needle in position. The arrow indicates the direction of the current.

The apparatus used on this occasion was such as could be hastily adapted from the ordinary office instruments: a large needle from an aspirating set, with a piece of drainage tube and a small glass funnel.

As to the benefit of the salt infusion in this case there cannot be a shadow of doubt. The relief given was as apparent as from tracheotomy in diphtheria.

The salt infusion was not tried until all other means had failed. Should the patient die it has given a week of life and hope.

February 28th. The patient is doing well. The prognosis is favorable.

There was progressive anæmia until February 18th, when the red corpuscles had diminished to 1,180,000. After this time they began to increase, and on February 28th reached 2,040,000 per c. m. m.

Harrington (F.B.)

(box. 269.)

